We will cover

- Definition of Ethics
- Engineering failures
- Codes of Ethics
- Professional Engineering laws & rules
- QBS
- Case studies
- Question and Answer
How do you define Ethics and/or Ethical behavior?

Definitions

- **Trustworthy** – able to be relied on to do or provide what is needed or right: deserving of trust
- **Morality** – concept of right or wrong; individual conscience, codes of behavior
- **Integrity** – being honest and having strong moral principles; choice to uphold oneself to consistently moral and ethical standards
- **Ethics** – the science of human duty; body of rules of duty drawn from this science; rules of practice
Ethical Principles

- Do no harm – Health safety and welfare of public
- Area of competence
- Objective and honest
- Avoid conflict of interest
- Public and Profession above profit

Trust and Ethics

- A fundamental business concern
- Demonstrated by business practices
- “Well, it depends” = conditional ethics
- Gap between what people want to do and what they actually do
Only one ethic

- **The Golden Rule**
  - “Treat others as you want to be treated”.
  - There is a version of this standard in just about every Culture on the planet

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**Trust and Ethics**

- “Doing the right thing may not always be easy – but it is always right”

- John C. Maxwell
Ethical Dilemma – The Gray Zone

1. We do what’s most convenient
2. We do what we must to win
3. We rationalize our choices with Relativism = situational ethics

• A change in the wind . . . . ?

Engineers as Ethical Leaders

• Do we have the will to follow it?

• Can we lead?

A leader is one who knows the way, goes the way, and shows the way.

– John C. Maxwell
Ethical Conduct

- Work relationships
- Legal compliance
- Conflict of interest
- Bribery and kickbacks
- Confidential information
- Consideration of employer assets
- Moonlighting

• Black and white? Or gray?

Work Relationships

- Partnership between Client and Consultant to serve the best interest of the public
- Communication, expectations and tribulations
- Go to the field
- Know your contract
- Do your QA/QC
Business Choices

- Sarbanes–Oxley
- Taking care of clients
- Paying sub-consultants
- Recruiting staff
- Political contributions

Workplace Situations

- Respecting coworker privacy
- Taking home office supplies
- Use of mobile phones
- Time spent on the internet
- Computer licensing
- “Groupthink” of workplace
Failures change the future

- Johnstown Flood, PA 1889
- Quebec Bridge, Canada 1907 and 1916
- Boston Molasses Disaster, MA 1919
- St Francis Dam, CA 928
- New London School Explosion, TX 1937
- Tacoma Narrows Bridge, WA 1940
- Challenger Explosion, Florida, 1986
- Columbia Shuttle, TX/LA 2003

Johnstown Flood: May 31, 1889

**Input**
- Johnston pop. 30,000
- Cambria Iron Works
- South Fork Dam privately owned, 14 miles upstream
- Lowered for road on top
- Previous owner removed discharge pipes
- Rained 6-10 Inches in 24 hrs
- 3 Telegraph warnings, not passed to authorities

**Outcome**
- 40 minutes to drain the lake
- Hit Johnston in 57 min.
- Trees, houses, animals, rail cars and barbed wire
- Stone Bridge fire, 3 days
- 2209 Fatalities, 99 entire families, 396 children
- American Red Cross 1st major disaster effort- 5 months
- Law change on liability
Rylands v. Fletcher

• South Fork Fishing and Hunting Club modified the dam but were they negligent?
• By design, Club had few resources despite rich members, survivors unable to recover damages.

• Rylands: non-negligent defendant can be held liable for damage caused by the unnatural use of land.

• Foreshowed of 20th century acceptance of strict liability.

Boston Molasses Disaster, 1919

• Input
  • Cylinder stress failure
  • 50 Ft tall, 90 Ft dia
  • Rivets “shot out”
  • Molasses 25 Ft high & 35 mph
  • Rapid temperature change/fermentation
  • Leaks – painted tank brown/free sweetener

• Outcome
  • 21 died, 150 injured
  • Questionable testing and construction –
    • Failure at MH at tank base
    • 1st class-action lawsuit in MA, took 3 years
  • Purity Distilling – claimed anarchists to blame
New London School Explosion, 1937

**Input**
- Rich school district - oil
- $1 mil steel & concrete
- Tap into Parade Gasoline residue gas line – save $$
- Odorless & colorless
- Sparked by electric sander
- Heard for miles
- Aid – roughnecks, Texas Rangers, Boy Scouts
- Mother Frances Hospital

**Outcome**
- 300 killed, 300 injured
- Texas legislature in session, established TBPE
- Mercaptans added to natural gas worldwide

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**Walter Cronkite**

- One of his first assignments for the United Press
- He went on to covered World War II and Nuremberg trails

“I did nothing in my studies nor in my life to prepare me for a story of the magnitude of that New London tragedy, nor has any story since that awful day equaled it.”
More recent/relevant failures . .

- Minneapolis Bridge Failure, August 2007
- Dallas Cowboy Facility collapse, May 2009
- Argyle Athletic Facility collapse, April 2016

The Gray Zone?

- Allen HS Football Stadium
  - Opened Jan 2013, $60 mil
  - Closed June 2014 – cracks on concourse
  - Repairs by original design & construction professionals
  - No one has accepted blame
Formal Codes and Standards

- National Institute for Engineering Ethics
- American Society of Civil Engineers
- National Society of Professional Engineers
- APWA Standard of Professional Conduct
- Texas Board of Professional Engineers

National Society of Professional Engineers

- Preamble
- Fundamental Canons
- Rules of Practice
- Professional Obligations –
  - Obligation to protect the health, safety and welfare of the general public
  - Putting professional interests above self-interests
  - Attain and maintain competence
American Society of Civil Engineers
Code of Ethics

- Principles and Canons:
  - Canon #1 – Safety, health and welfare of public
  - Canon #2 – Perform only in area of competence
  - Canon #3 – Objective and truthful
  - Canon #4 – Act as faithful agents, avoid conflicts of interest
  - Canon #5 – Reputation on merit/fair competition
  - Canon #6 – Uphold honor, integrity and dignity of profession
  - Canon #7 – Continue professional development

Cowboy Code to Life

- Don’t squat with your spurs on.
- If you find yourself in a hole, first thing to do is stop diggin’.
- If your ridin’ ahead of the herd, look back every now and then to make sure it’s still with ya.
- The easiest way to eat crow is while it is warm.
- Always drink upstream of the herd.
- If you get to thinkin’ you’re a person of some influence, try orderin’ somebody else’s dog around.
Even Pirates have a code

- Every man shall obey civil Command
- Keeping a secret or stealing is grounds for being marooned
- A man striking another man shall receive Moses' Law (39 stripes) on a bare back
- Endangering the ship with fire – Moses' Law
- Meddling with a prudent woman without her consent, shall suffer present Death

Texas Board of Professional Engineers

- A Law, not a Code
- Title 6, Regulation of Engineering; Chapter 1001. Engineer; Subchapter C: Professional Conduct and Ethics
- 60% of Complaints business ethics related
- Established the Murdough Center
- On-line ethics quiz measures knowledge of law and rules
State Codes of Conduct

- OK – Oldest law, 1907
- LA – Second State, 1908
- TX - 1937

- Common elements – Protect the public; objective and truthful; competent; confidentiality of client; responsible to the profession.
- Licensee and the Public relationship, not a code of ethics.

Qualification Based Selection

- Protects the public welfare – highly skilled service
- Protects the taxpayer – Engineering = 0.5 to 2 % of overall total project cost
- Benefits small firms – provides a forum demonstrating capabilities
- Promotes technical innovation – Owner defines project scope during the selection process
QBS – Qualification Based Selection

- QBS - procedure whereby service providers are retained on the basis of qualifications, rather than price factors.
- QBS vs Bid
- When is work Bid?
- When is work under QBS?
- What to do when they have it wrong.

Case Study – TBPE Disciplinary Case: Going to the Field

- Foundation company hires licensed PE to verify foundation work done according to plan and properly constructed.
- Engineer writes and signs letter of verification
- Another Inspector trade discovers all is not well
- Foundation company refunds money
- What about the engineer?
Case Study – TBPE Disciplinary Case: Conflict of Interest

- On site at long term development performing CA services for Engineering
- Contractor makes request
- Licensee’s actions
- Lawyer
- Board Action

Websites

- www.nspe.org/resources/ethics
- NSPE You be the Judge Archive
- www.niee.org
- www.asce.org/inside/codesofethics.cfm
- www.murdough.ttu.edu
- www.ethicsinstitute.com
- http://onlineethics.org
INSPIRATION

THE OPTIMIST EXPECTS IT
TO CHANGE. THE LEADER
ADJUSTS THE SAILS.

John C. Maxwell / @InspiringThinker

Question and Answer
The Whistleblowers

- Space Challenger – Bob Ebeling
  - One of five engineers who no-goed the flight
  - Grief and Guilt
  - Winner – cared and acted
- Hurricane Sandy – Andrew Braum
  - Changes to Engineers report
  - Lawsuits in progress